UNIVERSITY EXAMINATIONS

EXAMINATION JANUARY / APRIL 2023/2024 DIPLOMA IN COMPUTER SCIENCE.

RCS 031: LINUX.

DATE: -- /-- /2024. TIME: 2 HOURS

GENERAL INSTRUCTIONS:

Students are NOT permitted to write on the examination paper during reading time.
This is a closed book examination. Text book/Reference books/notes are not permitted.

SPECIAL INSTRUCTIONS:

This examination paper consists Questions in Section A followed by section B.

Answer **Question 1 and any Other Two** questions.

QUESTIONS in ALL Sections should be answered in answer booklet(s).

1. **PLEASE start the answer to EACH question on a NEW PAGE.**
2. **Keep your phone(s) switched off at the front of the examination room.**
3. **Keep ALL bags and caps at the front of the examination room and DO NOT refer to ANY unauthorized material during the course of the examination.**
4. **ALWAYS show your working.**
5. **Marks indicated in parenthesis i.e. ( ) will be awarded for clear and logical answers.**
6. **Write your REGISTRATION No. clearly on the answer booklet(s).**
7. **For the Questions, write the number of the question on the answer booklet cover page in the order you answered them.**
8. **DO NOT use your PHONE as a CALCULATOR.**
9. **YOU are ONLY ALLOWED to leave the exam room 1 hour to the end of the Exam.**
10. **DO NOT write on the QUESTION PAPER. Use the back of your BOOKLET for any calculations or rough work.**

SECTION A (COMPULSORY).

Question (1) - (30Marks)

a) State **SIX** distributions of Linux Operating Systems. **(6 Marks)**

b) Differentiate between Linux and Unix. **(2 Marks)**

c) Define the following terms as used in Linux Operating systems. **(5 Marks)**

i. Proprietary.
ii. Open source.
iii. System Calls.
iv. System Libraries.
v. Multiprogramming.

d) State and briefly describe **FIVE** types of Kernels used in operating systems. **(5 Marks)**

e) Considering the Linux Commands, explain what will be achieved by running the following commands on the Linux CLI. **(5 Marks)**

i. $cd
ii. $cp
iii. $rm
iv. $pwd
v. $mkdir

f) Explain **SEVEN** features that makes Linux a desirable operating system in many facets of computing. **(7 Marks)**

SECTION B (Answer Any Two Questions).

Question (2) - (15 Marks)

a) In details compare Linux and Windows Operating systems. **(5 Marks)**

b) Define the term system call. **(2 Marks)**

c) Explain the purposes of the following System Calls Process Management in Linux operating systems. **(5 Marks)**

i. fork() :
ii. exec() :
iii. wait() :
iv. exit() :
v. getpid() :

d) Outline differences between the Linux Bash and Window's D.O.S. **(3 Marks)**

Question (3) - (15 Marks)

a) Define the term Virtual Memory. **(2 Marks)**

b) Explain the purpose of Swap partition in the Linux OS system? **(2 Marks)**

c) With reference to Linux operating systems, define Shell. **(1 Marks)**

d) State and briefly describe **FIVE** variations of shells, which are used in Linux OS. **(10 Marks)**

Question (4) - (15 Marks)

a) Differentiate between Kernel Mode & User Mode in operating systems? **(4 Marks)**

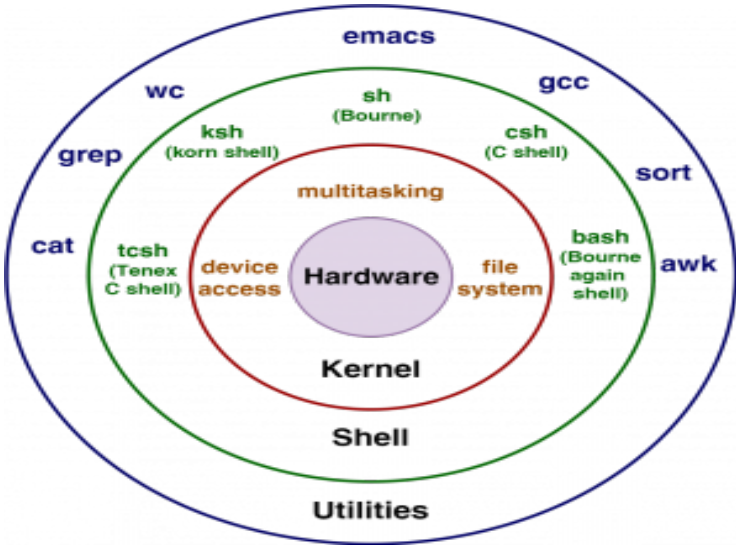
b) Explain what fragmentation means in both Memory and storage devices. **(4 Marks)**

c) Why is necessary to defragment internal hard disc drive? Explain. **(3 Marks)**

d) Describe the [ssh-protocol] and state how is it used to secure remote access in Linux? **(4 Marks)**

Question (5) - (15 Marks)

a) Considering the diagram below of a Linux environment, describe the purposes of the various **major** components of operating systems. **(3 Marks)**



b) State the Linux commands, you would use in a command line interface to achieve the following tasks? **(7 Marks)**

i. Change or modify files ownership for users / user groups.
ii. Print the user's name of the user logged into the system.
iii. Display network information of a host/system.
iv. Remove directories/folders/file in a system.
v. Help or display details about a command.
vi. Change or modify files permissions.
vii. Log into a remote host/system.

c) Discus the various states processes go through during the **Linux's** process life cycle. **(5 Marks)**

END